

AMENDMENTS TO THE CLAIMS

This listing of claims replaces all prior versions, and listings, of claims in the application:

Listing of the Claims:

Claims 1-10 (**Canceled**)

11. (**Canceled**)

12. (**Currently amended**) The method according to claim [[11]] 25, wherein the step of analyzing the output waveform includes utilizing chronocoulometry.

13. (**Currently amended**) The method according to claim [[11]] 25, wherein the step of analyzing the output waveform for presence of the characteristic waveform includes applying the output waveform to a digital lock-in amplifier.

14. (**Withdrawn/ Currently amended**) The method according to claim [[11]] 25, wherein the step of analyzing the output waveform for presence of the characteristic waveform includes fitting the output waveform to the characteristic waveform.

15. (**Withdrawn/ Previously presented**) The method according claim 14, wherein the step of fitting the output waveform to the characteristic waveform includes calculating an error between the characteristic waveform and the output waveform.

16. (**Withdrawn/ Currently amended**) The method according to claim [[11]] 25, wherein the step of analyzing the output waveform for presence of the characteristic waveform includes determining a background signal and subtracting the background signal from the output waveform.

17. (**Currently amended**) The method according to claim [[11]] 25 wherein the electron transfer moiety comprises a transition metal complex.

18. **(Currently amended)** The method according to claim [[11]] 25 wherein the target analyte comprises a nucleic acid.
19. **(Withdrawn/ Currently amended)** The method according to claim [[11]] 25 wherein the target analyte comprises a protein.
20. **(Currently amended)** The method according to claim [[11]] 25 wherein the input waveform comprises at least a portion having a frequency of about 100 kHz.
21. **(Currently amended)** The method according to claim [[11]] 25 wherein the input waveform is a voltage waveform and the output waveform is a current waveform.
22. **(Currently amended)** The method according to claim [[11]] 25 wherein the characteristic waveform comprises a Gaussian waveform.
23. **(Currently amended)** The method according to claim [[11]] 25 wherein the characteristic waveform comprises a modified Gaussian waveform.
24. **(Currently amended)** The method according to claim [[11]] 25 further comprising predicting the characteristic waveform, based at least on the electron transfer moiety.
25. **(Currently amended)** A method for detecting the presence of target analytes, the method comprising:
 - providing an electrode comprising a self-assembled monolayer and an assay complex covalently attached to the electrode, the assay complex comprising a target analyte, a capture binding ligand and an electron transfer moiety (ETM), wherein in the absence of said target analyte, said ETM is not present;
 - applying an input waveform to the electrode;
 - receiving an output waveform that is ~~unique to target analyte signals from the electrode,~~
 - ~~responsive to the input waveform~~ characteristic of the presence of said ETM;
 - analyzing the output waveform ~~using chronocoulometry~~ to identify electron transfer

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between the electron transfer moiety and the electrode as an indication of the presence of said target analytes wherein the analyzing step comprises peak recognition.